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Research and Development of Monochromators and Crystal-based Optics at APS

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The Crystal Optics section of the Optics and Detectors Group at the APS is for design, fabrication, and characterization of monochromators, crystal-based x-ray optical components, and related research and development. In this presentation, we will introduce our facilities, capabilities, and future upgrade and improvement plans on the development of crystal-based optics. We will also present some of our recent research work, including (1) fabrication of novel crystal monochromators, (2) theoretical studies of virtual source spread by monochromators and its effect on focusing, coherence, and imaging, (3) computerized Laue method for accurate determination of crystal orientations, and (4) computer programs for designing and modeling of high-resolution monochromators.